

Office Action Summary

Application No.

10/568,532

Applicant(s)

STEUER ET AL.

Examiner

AMJAD ABRAHAM

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 24-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-37 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 02/17/2006 and 07/25/2006.
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date herewith.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-23, drawn to a method for manufacturing a granulate containing polyvinylacetal.

Group II, claim(s) 24-37, drawn to the polyvinylacetal particulate.

2. The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the common technical feature is the manufacture of a polyvinylacetal granule. However, this common technical feature is known and described Lerman et al. (USP No. 3,472,801). Lerman discloses a process for processing a polymeric composition (that can be polyvinylacetal) into a molten state in order to obtain spherically formed powder. (See specifically, abstract, claims 1-3 and column 4 line 5). Thus, the common technical feature is known and groups I-II lack unity.

3. During a telephone conversation with Brion Heaney on February 3, 2009 a provisional election was made with traverse to prosecute the invention of group I, claims 1-23. Affirmation of this election must be made by applicant in replying to this Office action. Claims 24-37 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one

or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

5. The examiner has required restriction between product and process claims.

Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double

Art Unit: 1791

patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Office action on the merits continues below:

Specification

6. The disclosure is objected to because of the following informalities: Page 10 (line 15) of the specification contains the misspelled word "crew". Examiner has interpreted this to mean screw. Appropriate correction is required.

Claim Objections

7. Claim 4 is objected to because of the following informalities: The claim limitations "hot cutting down", "cold cutting down", and "strand extrusion" is not described by the specification. Examiner has interpreted these granulation processes to be similar to the hot pelletization and cold pelletization described in applicant's disclosure in pages 7-8. Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 1 recites the limitation "the molten state" in line 3. There is insufficient antecedent basis for this limitation in the claim.

10. Claim 9 recites the limitation "the extruder" in line 2. There is insufficient antecedent basis for this limitation in the claim.

11. Claim 10 recites the limitation "the screws" in line 2. There is insufficient antecedent basis for this limitation in the claim.

12. Claims 9 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The use of "L/D" in Claim 9 (line 3) and claim 11 (line 3) is unclear. L/D ratio is not a unit of length but a ratio between the length of an extruder screw and the diameter of the extruder screw.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. *Claims 1-3 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Lerman et al. (USP No. 3,472,801).*

15. Regarding claim 1, Lerman teaches a method for forming spherical particulate, from a composition containing a polyvinylacetal which is initially converted into a molten state prior to production of the particulate. **(See specifically, abstract, claims 1-3 and column 4 line 5. Also see claims 2, 11, and 14 disclosing that the polymer composition is a molten extrudate.)**

16. Regarding claim 2, Lerman teaches that the polymer composition is typically heated to a temperature sufficient to soften or melt the polymer. Lerman teaches that

the general processing temperature is between 200 F to 500 F (93 C to 260 C). (See column 6 lines 16-25 and claim 14).

17. Regarding claim 3, Lerman teaches the use of conventional screw extruder. (See column 6 line 9).

18. Regarding claim 5, Lerman teaches adding a foaming agent. (See abstract and column 6 lines 5-25)

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

21. *Claims 4, 13, and 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lerman et al. (USP No. 3,472,801).*

22. Regarding claim 4, Lerman does not explicitly teach wherein the granulate is manufactured by hot cutting down, cold cutting down or strand extrusion.

- a. However, Lerman does teach that after extrusion the polymer composition can be pelletized or granulated by conventional methods. Therefore, it would have been obvious to one having the ordinary skill in the art to post process the extrudant by hot cutting, cold cutting, or strand extrusion because it is well known in the art of extrusion to do so to form pellets or granules. (See column 6 lines 13-15)
- b. Furthermore, applicant has disclosed that it is conventional in the art to use a pelletization method to granulate an extruded strand of a polymer composition. (See applicant's disclosure (page 7) – disclosing that granulation is usually carried out in known ways such as pelletization.)
23. Regarding claim 13, Lerman teaches that the temperature in feeding of the polyvinylacetal-containing composition into the molten state is changed. (See claim 1 and column 6 lines 5-25).
24. Regarding claim 22, Lerman does not explicitly teach wherein the composition for manufacture of granulate which contains the polyvinylacetal, comprises 95 wt % polyvinylacetal. (However, Lerman discloses that any resin could be used including mixtures comprising polyvinylacetal. Thus, it would have been obvious to use a resin which was about 95% polyvinylacetal.)

25. *Claims 6-8 ,12, and 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lerman et al. (USP No. 3,472,801) in view of Applicant's admitted prior art (hereinafter, "APA"—see applicant's specification).*

26. Regarding claim 6, Lerman does not explicitly teach: wherein at least one part of the polyvinylacetal-containing composition is transferred via at least one side stream inlet into an extruder.

c. However, APA discloses that it is well known in the art to transfer the polyvinylacetal composition via a side stream inlet into an extruder. **(See page 10 lines 24-29 of applicant's specification).**

27. Regarding claim 7, Lerman does not explicitly teach wherein at least 90 wt % of the polyvinylacetal-containing composition is transferred via at least one side stream inlet into the extruder.

d. However, Lerman discloses that any polymeric material that can be softened or melted with heat can be used including polyvinylacetal. **(See column 3 line 64 to column 4 line 15).**

i. Thus, it would have been obvious to one having the ordinary skill in the art to use various compositions of polyvinylacetal depending on the intended end use and product requirements of the resin. Clearly the polyvinylacetal containing composition can be anywhere from 0-100% polyvinylacetal as long as the remaining composition can be heated or melted.

28. Regarding claims 8 and 12, Lerman does not explicitly teach: (1) wherein the side stream inlet is cooled by means of which at least one part of the polyvinylacetal-containing composition is fed into the extruder and (2) wherein the temperature of the cooling means is less than or equal to the glass transition temperature of the composition, which contains at least one polyvinylacetal. **(However, it is well known in the art to keep the feed or inlet section of the resin to be conveyed at a lower temperature than the melt temperature in order to eliminate resin melting in the inlet that can lead to flow plugging. Thus, it would have been obvious to one having the ordinary skill in the art to cool down the inlet stream to an extruder device in order to stop the resin from melting in the feed section.)**

29. Regarding claim 23, Lerman does not teach wherein the composition for manufacture of granulates, which contains the polyvinylacetal, contains at the most 2 wt % external softener. At most 2% includes zero.

e. Furthermore, APA teaches that the uses of external softeners are known to those having the ordinary skill in the art. **(See page 46 lines 8-15), and optimizing the amount depending on final use of the product would be obvious to one of ordinary skill in the art.**

30. *Claims 9-11 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lerman et al. (USP No. 3,472,801) in view of Rosato (Extruding Plastics – A Practical Processing Handbook, Springer-Verlag (1998)).*

31. Regarding claims 9-11, Lerman does not teach: (1) wherein the region of the extruder from the main inlet up to a length of at least $15 \cdot L/D$ is cooled, (2) wherein at least one of the screws is cooled, and (3) wherein the screw is cooled over the range of the extruder from the main inlet up to a length of at least $10 \cdot L/D$.

f. However, Rosato teaches that it is well known in the art of extrusion to cool extruder screws. (See page 213, disclosing that extruder screws are typically cooled by utilizing a cooling water/oil source through the cored center section of the screw. Furthermore, Rosato teaches that a portion of the screw may be cooled (at least the feed section). Rosato discloses that the best location for the cooling pipe is within the first five screw flights. Therefore, it would have been obvious to one having the ordinary skill in the art to modify the teachings of Lerman to include the teachings of Rosato to modify the extrusion process with cooling pipes in the screw sections.)

32. Regarding claim 14, Lerman teaches wherein the temperature during the conversion into the molten state is increased. (See claim 1 and column 6 lines 5-25).

33. Regarding claim 15, Lerman does not teach that gaseous compounds, which arise upon conversion of the polyvinylacetal-containing composition into the molten state, are removed from the composition.

g. However, Rosato teaches that extruder venting is well known in the art of extrusion technology because it is well known in the art that gaseous

components are freed during the extrusion process. **(See page 221 and figure 4.10).**

34. Regarding claim 16, the combination of Lerman and Rosato does not explicitly teach wherein part of the gaseous compounds is removed through the main entry port of the extruder. **However, one having the ordinary skill in the art would realize that gas will escape back through the entry port (feed port) if the feed port is vented and no feed material is present.**

35. *Claims 17-20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lerman et al. (USP No. 3,472,801) in view of Applicant's admitted prior art (hereinafter, "APA"—see applicant's specification) in view of Nachtergaele No. 5,032,337)*

36. Regarding claims 17-20, Lerman and APA does not explicitly teach: (1) that the side stream input takes place by means of a dosing device with one or two screw-conveyors, (2) that the extruder screws diameter is larger than the screw diameter of the side stream dosing, (3) that the ratio of the screw diameter of the extruder to the screw diameter of the side stream dosing lies in the range from 1.1:1 to 10:1, and (4) that the temperature in the region of the side stream dosing is less than or equal to the glass transition temperature of the composition which contains at least one polyvinylacetal.

h. However, Nachtergaele discloses the use a dosing screw unit which delivers material to the extrusion screws. **(See column 3 lines 24-34).**

i. It would have been obvious to one having the ordinary skill in the art to use a dosing screw as the side stream inlet to the extrusion screw to control the amount of feed materials are present to ensure a proper blending of ingredients and thus a uniform end product. The extruder screw diameter is typically larger in order to accommodate the dosing stream inlet plus additional additives that are added to the extruder blend. As the extruder handles a higher quantity of material the extruder screw would obviously have to be bigger in order to have a uniform flow rate. Furthermore the determination of the ratio of screw diameter of the dosing stream and extruder is a matter of conventional design that would be routine among feed inlet and side inlet design when creating an extrusion system. Also it is important in feed/sidestream inlet design to keep the dosing stream cooled to that no polymerization will occur in the line that will plug the dosing stream. It would have been obvious to one having the ordinary skill in the art to do this to minimize extruder shut down due to plugging of the dosing lines.

37. *Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lerman et al. (USP No. 3,472,801) in view of Miyake (US Pre-grant Publication 2003/0109636 A1).*

38. Regarding claim 21, Lerman does not teach that the composition for manufacture of granulate which contains the polyvinylacetal, has a glass transition temperature greater than or equal to 0.degree. C.

j. However, Miyake teaches that the typical glass transition temperature for a polyvinylacetal resin is between 55 to 110 C. **(See paragraph [0050] disclosing that heat deformation may occur if polyvinylacetal with a glass transition temperature less than 55 C is used.)**

k. The use of a polyvinylacetal resin with a glass transition temperature which is greater than 0 C is known in the art. Polyvinylacetal resin is typically used in the production of films or sheets and it is important that the film or sheet is not soft or heat deformable at room temperature. Thus, it would have been obvious to one having the ordinary skill in the art to use a polyvinylacetal with a glass transition temperature greater than 0 C.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMJAD ABRAHAM whose telephone number is (571)270-7058. The examiner can normally be reached on Monday through Friday 8:00 AM to 5:00 PM Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Phillip Tucker can be reached on (571) 272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AAA

/Philip C Tucker/

Supervisory Patent Examiner, Art Unit 1791